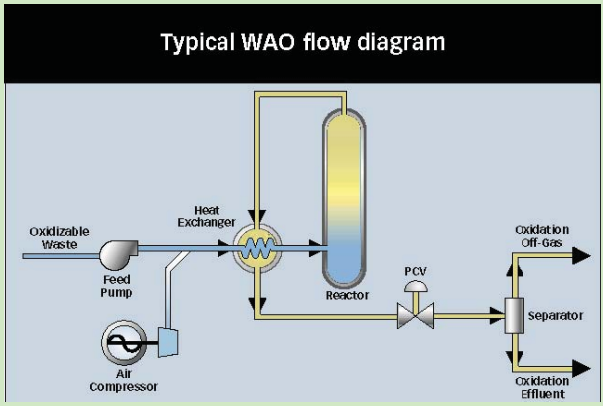
DOE Site:	Savannah River Site/SRS
EM Project:	SRS Tank 48H Waste Treatment Project
TRA Report Date:	July 2007

Technology Readiness Assessment Summary

United States Department of Energy Office of Environmental Management (DOE-EM)

Savannah River Site Tank 48H Waste Treatment Project

Why DOE-EM Did This Review



Wet Air Oxidation Process

Savannah River Tank 48H is a 1.3 million gal tank containing approximately 250, 000 gal of high-level liquid waste. The waste is a salt solution that also contains tetraphenylborate (TPB), which can release potentially flammable concentrations of benzene vapor to the tank head space. Two potential treatment options have been identified for this organic-bearing tank waste: Wet Air Oxidation (WAO) and Fluidized Bed Steam Reforming (FBSR). This assessment was conducted to aid in deciding which technology should be pursued for treating the Tank 48H waste.

What the TRA Team Found

The assessment team determined the Critical Technology Elements (CTEs) and the associated Technology Readiness Level (TRL) for each process, as listed below:

- Wet Air Oxidation Process:
  - Reactor system (TRL=3)
  - Offgas Treatment System (TRL=2)
- Fluidized Bed Steam Reforming Process:
  - Steam Reformer System (TRL=4)
  - Offgas Treatment System (TRL=4)
  - Product Handling System (TRL=3)

The team concluded that both WAO and FBSR are viable technologies for the treating the Tank 48H waste. FBSR is more advanced; however, both require technology maturity. The team noted that it would be preferred to choose one primary technology to receive the bulk of the effort and investment, while the other could be carried at a significantly lower investment and be used as a back-up to the primary.

What the TRA Team Recommended

The team recommended the following for the WAO process:

- The reactor should undergo pilot-scale testing with simulants, laboratory-scale testing with actual wastes, and concept development to support design implementation.
- The offgas system should undergo laboratory and bench-scale testing with actual wastes (if practical). However, if using actual waste is not feasible in laboratory tests, offgas testing using tracers at commissioning should be considered.

The team recommended the following for the FBSR process:

- The Steam Reformer Subsystem requires further testing of the cyclone downcomer and other components.
- Testing and development of the Product Handling System is required to demonstrate transferring material at the wt% levels anticipated for plant operations. In addition, technical issues have been identified with meeting acceptance criteria for the tank farm that may require wet product sieving and/or waste blending.

To view the full TRA reports, please visit this web site:
http://www.em.doe.gov/Pages/ExternalTechReviews.aspx

TRA Summary: August 2011

The objective of a Technology Readiness Assessment (TRA) is to determine the maturity of certain key technologies, identified as Critical Technology Elements (CTEs), using a systematic, metric-based process and to evaluate the readiness of these technologies for insertion into a project design.